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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
APICELLA, KARIE O	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/518,467	DUBITSKY ET AL.	
	Examiner	Art Unit	
	Karie O'Neill Apicella	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *53-104* is/are pending in the application.

4a) Of the above claim(s) *72-104* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *53-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Applicant's amendment filed on January 7, 2010, was received. Claim 53 has been amended. Claims 1-52 have been canceled. Claims 72-104 have been withdrawn from consideration as being drawn to a non-elected group. Therefore, Claims 53-71 are pending in this office action.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on July 10, 2009.

Claim Rejections - 35 USC § 112

3. The rejection of Claims 53-71 under 35 U.S.C. 112, second paragraph, has been overcome based on the amendment to the claims and the arguments presented on page 10 of the Remarks dated January 7, 2010.

4. The rejection of Claim 58 under 35 U.S.C. 112, second paragraph, has been overcome based the arguments presented on page 11 of the Remarks dated January 7, 2010.

Claim Rejections - 35 USC § 102

5. The rejection of Claims 53-60 and 62-71 under 35 U.S.C. 102(b) as being anticipated by Scherer et al. (US 5,656,386), has been maintained. The rejection is repeated below for convenience.

With regard to Claims 53-57, Scherer et al. discloses a fuel cell comprising a cell, wherein the cell has an anode (2a), a cathode (2b) and a polymer electrolyte membrane (4) placed between the anode (2a) and the cathode (2b). Scherer et al. discloses the membrane (4) comprising a base polymer, selected from the groups formed by substituted and un-substituted polyolefins, which is radiation grafted with terminally sulfonated radicals derived from vinyl monomers which are selected from the group formed by substituted and un-substituted vinyl monomers (see abstract). Scherer et al. discloses an operating temperature of the fuel cell being up to approximately 80°C (column 5 lines 10-11) and the ohmic loss due to membrane resistance rises by less than 100mV over a period of approximately 1000 hours at a current density of approximately 1 A/cm^2. This is equal to a membrane resistance rise by less than 0.1 Ωcm^2. Scherer et al. does not specifically disclose a value of cell resistance at 90°C not higher than 0.3 Ωcm^2 and a value of cell resistance at 20°C differing from the value of cell resistance at 90°C in an amount not higher than 90% with respect to the value of cell resistance at 90°C. Scherer et al. also does not disclose wherein the value of cell resistance at 90°C is between 0.02 Ωcm^2 and 0.25 Ωcm^2; wherein the value of cell resistance at 90°C is between 0.05 Ωcm^2 and 0.20 Ωcm^2; wherein the value of cell resistance at 20°C differs from the value of cell resistance at 90°C in an amount not higher than 70% with respect to the value of cell resistance at 90°C; and wherein the value of cell resistance at 20°C differs from the value of cell resistance at 90°C in an amount not higher than 50% with respect to the value of cell resistance at 90°C. However, such properties are inherent, given that both Scherer et al. and the instant

application utilize the same materials. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. See MPEP 2112.

With regard to Claim 58, Scherer et al. discloses wherein the side chains are grafted to the polyolefin through an oxygen bridge. Example 1 discloses the use of benzene as the grafting material (column 8 line 1).

With regard to Claims 59-60, Scherer et al. discloses the amount of grafting of the side chains to be in a range of 15 to 45% by weight (column 3 lines 65-67).

With regard to Claim 62, Scherer et al. disclose wherein the fuel cell is a hydrogen fuel cell (column 6 lines 63-67).

With regard to Claims 63-65, Scherer et al. discloses wherein the polyolefin selected from the group consisting of polyethylene and various other substituted and un-substituted polyolefins (column 3 lines 29-30 and 46-53). Scherer et al. discloses the use of low density polyethylene (column 3 lines 2-6).

With regard to Claims 66-69, Scherer et al. discloses wherein the side chains are selected from any hydrocarbon polymer chain which contains proton conductive functional groups or which may be modified to provide proton conductive functional groups and wherein the side chains are of unsaturated hydrocarbon monomers, such as styrene, α-methylstyrene, α-fluorostyrene and para-chloromethylstyrene (column 3 lines 53-55).

With regard to Claims 70 and 71, Scherer et al. discloses wherein the proton conductive functional groups are selected from sulfonic acid groups of, for example, chlorosulphonic acid (Example 1).

Claim Rejections - 35 USC § 103

6. The rejection of Claim 61 under 35 U.S.C. 103(a) as being unpatentable over Scherer et al. (US 5,656,386), as applied to Claims 53-60 and 62-71 above, and in further view of Ehrenberg et al. (US 5,679,482), is maintained. The rejection is repeated below for convenience.

Scherer et al. discloses the fuel cell in paragraph 5 above, but does not disclose wherein the fuel cell is a direct methanol fuel cell.

Ehrenberg et al. discloses an ion conducting membrane comprising poly(alpha-olefins), polydienes, and hydrogenated derivatives of polydienes, and the ion-conducting domain is provided by a component chosen from the group consisting of the sulfonic acids of polystyrene and poly(alpha-methylstyrene (column 3 lines 46-51) for use in a direct methanol fuel cell (column 12 lines 8-9). It would have been obvious to one of ordinary skill in the art to use a direct methanol fuel cell as the fuel cell of Scherer et al., because Ehrenberg et al. teaches that one key factor in the performance of a direct methanol fuel cell is the ability of the membrane to absorb water in order to conduct protons, yet not absorb and allow the significant transport of methanol (column 12 lines 10-15).

Response to Arguments

7. Applicant's arguments filed January 7, 2010, have been fully considered but they are not persuasive.

Applicant first argues that, "it is not enough for the Office merely to assert that the properties are inherent to the cells of Scherer et al. In fact, the Board has agreed that "when an examiner relies on inherency, it is incumbent on the examiner to point to the 'page and line' of the prior art which justifies an inherency theory." Ex parte Schricker, 56 U.S.P.Q.2d 1723, 1725 (Bd. Pat. App. & Int. 2000)".

In the rejection of record, it is clearly stated in the abstract and in column 5, lines 10-11, that Scherer et al. and the instant invention comprise the same materials, which justifies the inherency theory of the cell resistance.

Applicant next argues that, "a review of Scherer et al. and Applicants' specification evidences that the claimed properties are NOT inherent to a fuel cell comprising a cell, wherein the cell has: (a) an anode; (b) a cathode; and (c) a polymer electrolyte membrane placed between the anode and the cathode which comprises at least one polyolefin grafted with side chains containing proton conductive functional groups."

The structural features of the fuel cell comprising a cell that has: (a) an anode; (b) a cathode; and (c) a polymer electrolyte membrane are not inherent properties. The inherency comes from the combination of the (a) an anode; (b) a cathode; and (c) a polymer electrolyte membrane placed between the anode and the cathode which comprises at least one polyolefin grafted with side chains containing proton conductive

functional groups." Since Scherer et al. discloses a cell having the combination of the anode, cathode and specific polymer electrolyte, inherency can be established that the cell resistance of Scherer et al. and the instant invention will be the same since each of the components of the cell, including the specific polymer electrolyte, is the same.

Applicant states that, "Scherer et al. discusses and uses a "Nafion type" polymer in its Examples 16-21, i.e., every example of a cell. In contrast, Applicants have noted that there are drawback associated with the use of Nafion, such as performance and cost." Applicant goes on to state that, "Applicants expressly compared the claimed invention against cells comprising Nafion in Example 5 by testing cell resistance at various temperatures as shown in Table 2 and Figure 2. Applicants assert, "Table 2 and Fig. 2 clearly show that the fuel cell having the membranes according to the present invention (Example 3) has a high performance already at low temperatures (20°C) and maintain said high performances in the whole temperature range.""

It is correct that Examples 16-21 in Scherer et al. disclose embodiments of cells. However, Examples 17-19 of Scherer et al. do not use a Nafion-type membrane as the polymer membrane in the cell. Examples 17-19 use the FEP film, made of a copolymer of hexafluoropropylene and tetrafluoroethylene, as described in Examples 10, 12 and 14. Therefore, Applicants argument that all of the examples of cells in Scherer et al. (Examples 16-21) use a Nafion-type membrane is incorrect. The comparison of the claimed invention against cells comprising Nafion, as shown in Table 2 and Figure 2 of the instant specification, are not relevant since the examples of Scherer et al. being relied upon in the rejection of record do not use Nafion-type membranes.

Applicant continues to give examples from Table 2 of the instant specification to prove that "the cells with Nafion failed to meet the second claimed limitation, showing that the Nafion membranes do not have the claimed properties. Therefore, the present specification demonstrates that the use of Nation would result in values outside of the claimed ranges further demonstrating that the properties of Scherer et al. are not inherently identical to the present invention."

Again, the comparison of the claimed invention against cells comprising Nafion, as shown in Table 2 and Figure 2 of the instant specification, are not relevant to the rejection of record and the Scherer et al. reference, since the examples of Scherer et al. being relied upon in the rejection of record do not use Nafion-type membranes. Scherer et al. discloses the use of a membrane comprising a base polymer, selected from the groups formed by substituted and un-substituted polyolefins, which is radiation grafted with terminally sulfonated radicals derived from vinyl monomers which are selected from the group formed by substituted and un-substituted vinyl monomers, which is not a Nafion membrane and reads upon the instant claim limitations. Therefore, the instant invention and the Scherer et al. reference disclose the same structural components, which demonstrates that the cell resistance of the instant invention and the Scherer et al. are inherently the same. Applicant's argument is not persuasive and the rejection or record is maintained.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill Apicella whose telephone number is (571)272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/
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KOA